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PASTORAL ASSOCIATIONS AND THE MANAGEMENT OF NATURAL RESOURCES
Cases from Niger, Burkina Faso and Mali

Pyt Douma and Leo de Haan

1. INTRODUCTION

Pastoralism in Sub-Saharan Africa was, and still is in many cases, characterized by subsistence l livestock for the purpose of milk and adaptation to environmental variability by geographical mobility in exploiting natural grazing areas. Additional food requirements are met by the production, barter or purchase of grain. This type of exploitation of natural resources is mostly associated with dry lands. However, pastoral economies are not limited to these areas. In West Africa they show a recent tendency to expand in wetter, even sub-humid, areas.

Breukers (1991) has distinguished three successive periods in government policies in Africa concerning pastoralism and livestock. The colonial period was marked by a range of different objectives and measures, which generally came down to the pacification and administrative integration of the pastoralists on the one hand, and the strengthening of production, to increase the tax-base of the colonial governments, on the other.
In the period between 1960 and 1980 most African countries, having recently gained their independence, had a firm belief in the prospects of modern livestock management techniques to boost production for the national and international market. After 1980, it became increasingly clear that this western-inspired policy did not match the livelihood strategies of the pastoralists, for whom livestock breeding was more a way of life than a commercial enterprise.

In general, an episode of reflection ensued, during which there was a growing appreciation of the efficiency of traditional pastoral systems and their institutions for resource management.

This paper examines the experiences of pastoral associations with respect to the management of natural resources. First, section 2 gives a summary of what is considered to be the potential role of pastoral associations in natural resource management. Next, section 3 contains a review of livestock development policies in Niger, Burkina Faso and Mali and their concern with pastoral associations and resource management. Finally, section 4 presents and discusses the findings resulting from our appraisal of a number of pastoral associations in these countries and their performance. Section 5 concludes with a general discussion concerning therole of the Pas in the short and the long term.

2. PASTORAL ASSOCIATIONS AS LOCAL INSTITUTIONS FOR NATURAL RESOURCE MANAGEMENT

In West Africa community organizations are being increasingly acknowledged for their role in resource management. They have become local platforms for the implementation of all kinds of measures to promote sustainable land use. Well-known examples of this formof local initiative are the village associations implementing water harvesting techniques by building small dams; slowing down soil erosion by constructing terraces or laying rows of stones and planting grasses; and sometimes even reorganizing the entire village territory by introducing land use planning. In many villages scattered throughout the region these activities have resulted in what could be called an integrated management of natural resources (Van Den Breemer & Venema 1995).

More recently, and less known, are experiences with resource management by local organizations operating in pastoral or agro-pastoral societies, known as Patoral Associations (PAs).
These PAs can be defined as organizations of livestock owners, both pastoralists and agro-pastoralists, which aim to improve the living conditions of their participants, in particular through the advancement of their production system, and whose establishment was initiated by an external stimulus.
De Haan (1995) gives an example of such a PA in Benin. This PA was organized around a pool behind a small dam, constructed to assure enough drinking water for cattle in the dry season. To begin with, the PA concentrated on the maintenance of the dam and the pool and on regulating the access of cattle to the water. Eventually, this PA will reach a more advanced level of resource management by fixing grazing areas, rotating their use and preventing bush fires.

It should be noted that, however, natural resource management is not the only objective of most PAs and often not the most important one. As with the abovementioned village associations there is usually a package of objectives including the improvement of cattle health, the increase of livestock productivity and market integration. Food security and health care for the members of the community are prominent goals. Shanmugaratnam *et al*. (1992, p.2) therefore describe PAs as "all types of institutional arrangements that regulate individual and collective actions by pastoralists to safeguard and promote their economic, social, cultural and political interests". They distinguishe a number of functions, viz. land tenure, resource management, provision of services, communication of information, external relations and even the building and maintenance of community cohesion and morale. Nevertheless, the present drive by donors and governments for sustainable land use has boosted the environmental objectives of PAs.

Policy makers' perception of traditional pastoral production systems began to change during the late 1980s. A growing appreciation of the efficiency of the traditional systems can be observed. There has been increased sensitivity regarding the complexity of the traditional systems and more interest in the possibilities of using traditional institutions in resource management. However, it should be noted that this appreciation is generally restricted to (semi-)nomadic pastoralist systems.

According to Breukers (1991, pp.126-134), there is already substantial experience in Africa with PAs and natural resource management. Governments and donor agencies focus on local

groups of livestock owners to take on the responsibility for natural resource management. They are giving more attention to the motivation of herdsmen by ensuring appropriate incentives, while at the same time putting more emphasis on cost recovery. Groups are initially organized around valued inputs like veterinary care and water, and then evolve progressively towards resource management.
In evaluating PAs in a number of West African countries, Shanmugaratnam *et al.* (1992, p. 48) conclude that there is no universal model for PAs. The appropriate form for a PA will depend on local circumstances: "Ideally the functions of the different PAs should evolve from local needs and priorities through a participatory process." (See also Waters-Bayer & Bayer 1995, p.15.) The authors maintain that the management of natural resources will eventually be an important goal for all PAs.

3. LIVESTOCK DEVELOPMENT POLICIES, PASTORAL ASSOCIATIONS AND NATURAL RESOURCE MANAGEMENT IN NIGER, BURKINA FASO AND MALI

French colonial policy in West Africa was mainly oriented towards the increase of meat production by traditional pastoralists. Under this *politique de la viande* much effort was put into the training of veterinary personnel and the setting up a network of veterinary posts, where medicines were distributed, livestock was vaccinated and the health of slaughtered animals was certified. After independence this policy was continued, especially under the auspices of the European Development Fund.

Another path in livestock development policies was inspired by the World Bank, the largest donor in this field in West Africa. In the early 1970s, ranching projects were started which copied earlier examples of settlement schemes for (semi)-nomadic pastoralists in East and Southern Africa. This policy brought about heavy capital investments in fencing, water development and the introduction of exotic breeds. The approach meant in effect the transfer of western ranching technology to semi-arid and arid tropical areas under expatriate management on parastatal ranches (C. De Haan 1994). The present *Zones Pastorales* in Burkina Faso find their origins in this period. Some started as ranches in the river blindness-free areas, which were considered to be suitable for planned colonisation by pastoralists.

Because western technology turned out to be inappropriate in the environmental, cultural and institutional setting of the Sahel and, moreover, because parastatal status induced high production costs, the ranch approach became a complete failure.

After the Great Drought a new approach emerged, i.e. the range-livestock projects, which focused on the development of communal rangelands through the construction of a physical infrastructure facilities such as water-points, roads and markets. Consequently, in Burkina Faso the state ranches were gradually transformed into group ranches. In Niger, the *Projet Gestion des Pâturages et Elevage* (PGPE), (also known in English- because of its USAID funding as the Niger Range and Livestock project) was started, and in Mali the *Opération de Développement de l'Elevage de la région de Mopti* (ODEM) on the inner delta of the Niger river.
Pastoralists in Niger became organized in *Groupements Mutualistes Pastoraux* (GMP). These were in fact credit cooperations, based on kinship and geographical proximity, and founded to facilitate the allocation of credit for food, fodder and the reconstitution of herds. Not by chance this credit scheme coincided with the uranium boom in Niger. However, the GMPs did

not develop into institutions to take over the maintenance and management of the pastoral infrastructure installed by the different projects.
In Mali, ODEM's activities with respect to the organization of pastoralists were limited too. They were mainly concerned with the organization of marketing and only occasionally with the management of wells or pastures. Only the regeneration of dry season pastures in de the inner delta was singled out for special attention, at least on paper.
C. De Haan (1994) judges the results of these range-livestock projects generally as poor, because of the lack of incentives to pastoralists. According to that author, who represents the typical neo-liberal point of view, poor cattle prices were offered to herders by the parastatal marketing monopolies, land and grazing rights were rigidly imposed, the implementing agencies were institutionally weak and an interdisciplinary approach was lacking. In view of this unsatisfactory situation, at the end of the 1980s more attention was paid to local participation.

PAs, mostly modern institutions but often with a background rooted in the traditional social structure, began to play an important role in the organization of herder-managed services such as animal health and the provision of water. It is from this PA approach that the current strategy of integrated natural resource management originates, and aims at comprehensive natural resource management by forming organizations of herdsmen. Though this is a promising conception, the implementation of this new approach is complex and therefore difficult.
Activities are still focused on the herdman’s primary needs, such as water, veterinary services, and not necessarily on resource management.

The *PAs* created by ODEM in Mali after 1986 were explicitly established to manage and protect the natural resources. They were usually organized around the management of a well and were entitled to levy taxes on every pastoralist who used the water and surrounding pastures.
The official recognition of a number of *Zones Pastorales* in Burkina Faso from 1984 onwards, can be considered as the lauch pad for PAs in that country. Most zones more or less coincide with the areas where previously ranches were to be established. In addition, in most (agro)-pastoral villages *Groupements Villageois d'Eleveurs* are in operation, similar to the *Groupements Villageois* of farmers founded after the 1984 revolution.

In Niger, the *Projet d'Elevage Niger Centre Est (PENCE)* focuses on the installation of *Groupements Mutualistes Pastorales.* This approach experienced some setbacks in the early 1980's due to the drought of 1982. The PENCE project has now succeeded in establishing six *"Centres Pastoraux"* in the eastern part of Niger. These CPs are in effect the key accomplishments of the project, they combine services for man and cattle, and provide the local populations with essential products, such as staple foods, soap, sugar and salt.
These CPs are meant to serve as regional centres from which several GMPs are provided.

4. PERFORMANCE OF PAs IN NATURAL RESOURCE MANAGEMENT

In order to assess the performance of PAs in the field of natural resource management, we have carried out a number of rapid appraisals in the field. For this purpose, we selected a sample of PAs, 66 in total, whose successful activities in the field of resource management had been mentioned in interviews or reports in the Sahel and Sudan zones of the three

countries. We did not aim for a random selection, nor did we select these PAs with the help of any kind of organizational typology. However, in the selection process a clear distinction was made between PAs which have a broad socio-economic objective and cooperative groups which focus on productive activities. We concentrated our attention on the first group, although a number of cooperatives were also visited, notably in Mali, but these were excluded from this overview. Additionally, in Niger, two Pastoral Centres (PC), encompassing several PAs, were visited, and included in the sample presented here. They are on a higher organizational level, providing services for vast pastoral areas. Thus, our primary selection criteria were, reported success, being part of an existing or past livestock development project and some distribution over the two ecological zones (Sudan and Sahel).

Despite the ongoing revolt of the Tamacheq in Niger and Mali, a substantial number of pastoralist organizations were visited in the war torn northern areas (notably in Niger). We could not visit PAs in the more northern dangerous areas of Mali. However, we did interview officials and members of PAs in the inner delta of the Niger in Mali.
Most PAs were visited for one or two days. In certain cases of particular interest, we included short visits to neighbouring PAs. Only the ecological assessments of the PAs of Zégoua, Bani, Lartchanga and Aljanaré took about a week each.
Some appraisals were executed solely by the researchers, others were done together with officials from the projects concerned. Of course, their presence tended to effect the answers given by the spokesmen of the PAs, as did the unstable security situation in Mali and Niger north of the 12th parallel.

We collected information on numerous aspects of the PAs visited which are partly presented in Table 1. We have evaluated each PA in terms of the following aspects: water management; pasture management; production oriented management; the capacity to implement preventive measures to avoid soil degradation; and, finally, the degree of participation of members of the various PAs (1).
In this table one finds PAs with a negative score for all indicators apart from the participation assessment. In those cases the PA is very active but has not yet succeeded in acquiring a water-point or lacks the means to control pastures, and so on.
The overall picture shows that a substantial number of the PAs visited do perform well on one or more dimensions. Out of a total of sixty-six Pas, 19 (29%) show positive simultaneous involvement in at least three fields of activity. Moreover, their individual performance coincides with the overall performance of the larger projects they were part of. The ODEM (Mali) and PENCE project (Niger) were mostly oriented towards the management of wells and boreholes, whereas the PDES (*Projet de Developpement de L'elevage dans le Soum)* in Burkina Faso was geared towards animal production.

Table 2 presents the results by project and by ecological area. The PAs of the Zones Pastorales in Burkina Faso stand out on account of their water management capacities, as well as their ability to effectively control and manage their pastoral resources. The PAs of the ODEM and PENCE projects show a reasonable degree of water management capacity, but the findings in the field show a mixed picture as the status of modern facilities is unresolved. Both the PDES and the PES (*Projet de L'elevage dans le Soum,* both in northern Burkina Faso, have a high score for productivity-oriented management. Measures against further degradation of natural resources are mostly being applied in Burkina Faso (PDES and the Zones Pastorales). Not surprisingly, a high number of PAs visited are more or less functioning well, since success was an original selection criterion. Amazingly, almost half the PAs visited

in the war zone of Niger continue to function well in spite of the insecurity prevailing in the area. (PSN sample for Niger) Comparing both ecological zones (soudan and Sahel) seems a spurious exercise as only 9 cases represent the Sudan zone. Their performance is favourably biased by the inclusion of well organised Pastoral Zones.

Returning to the main subject of this paper, we now continue to highlight the relevant aspects of the management of natural resources, in particular water and grazing.

Water management

Water can be found in many forms in pastoral areas. Its property status is of primary importance since it determines the degree of access to the surrounding pastures too. Natural streams and permanent or semi-permanent lakes and ponds are usually accessible to all groups. Traditional wells, however, are dug (and paid for) by groups of individuals, usually groups of kinsmen, and are thus communal property. Access is not possible without preliminary permission, although most herdsmen, passing by on transhumance, are permitted to water their animals for a few days.

Modern wells of all typescan be found, e.g. concrete wells, boreholes, whether or not equipped with a motor pump, etc. In some cases these wells were constructed to open up new pastures, hitherto lacking sufficient water in the dry season and thus under-exploited. In other cases, they replaced traditional wells because these need considerable amounts of wood for construction and maintenance.

Finally, there are semi-modern facilities, such as small artificially dug ponds, or small dams in streams, to store water temporarily. They resemble the natural ponds which had often been deepened by the local population over the course of time.

PA members usually contribute, either in labour or in cash, to the construction of water facilities installed by a government or donor agency. Sometimes these contributions are considerable, either in cash, as was the case for various *Associations Pastorales* in the Séno Mango of Mali, or in labour, as was the case for the villages of Serma and Boni, whose inhabitants deepened the natural Lake Ousougo in the same region. However, most contributions are minimal, sometimes even negligible.

Nevertheless, the increased storage capacity of the Lake Ousougo allows animals to stay longer in the area and to profit from pastures still available.

Most *Groupements Villageois d'Eleveurs* in the Soum of Burkina Faso have dug small ponds just outside their village. Though these ponds usually dry up in January, they contribute to the desired extension of the local grazing season and safe clean drinking-water for human consumption.

It is well known that modern wells, especially when equipped with motor pumps, and large reservoirs behind dams attract pastoralists and their herds from all over a region, thus giving rise to overgrazing. Especially when the infrastructure is entirely state or donor financed, the water is generally considered as an open access resource, no matter what regulation is imposed.

Like other PAs in the *Projet d'Elevage Niger Centre Est* (PENCE), the PA of Tejira levied a monthly fee on all member-herdsmen using the water from the pumping station. Also transhumants were taxed, though they could be exempted when staying for only a few days.

Since PENCE has ended, the water is now free of charge. This decay started with transhumants refusing to pay any longer, followed by local members. Since the

democratisation process changed the power relations in the region, the PA no longer has the autonomy to close the pumping station, even though signs of overgrazing are obvious.
The ownership of modern wells does not correspond to traditional rules and structures in other cases too. This explains why the PA of Lartchanga in Niger, whose members are Aza, cannot levy water fees from the members of the neighbouring PA, because this PA consists of their traditional Daza lords. In addition, we have noticed that modern wells cannot be maintained by the PAs without the help of government or donor agencies, either due to the level of technical skill required or to the high costs involved.

From the 20 deep wells we have encountered in Mali, only the one in Boni was working properly. In Boni pastures were well managed too, access was regulated and overgrazing stopped. One is inclined to conclude that this success can be attributed to the fact that the PAs are embedded in traditional structures. However, Van Dijk & De Bruijn (1995) have already shown that this success was accompanied by the exclusion of a majority of poorer herdsmen from the benefits of the project.
In most *Zones Pastorales* in Burkina Faso, wells and dams have been constructed to increase the availability of water. PAs administer the use of water and the maintenance of the facilities. Access to water, however, is unconditionally reserved for members. In these cases management is successful.

We may conclude therefore, that the question of ownership is crucial to water management. If modern wells or semi-modern facilities are perceived to be public, management of surrounding pastures cannot be exercised. In our sample we found that in 12 out of 25 cases where modern wells or boreholes were available, the public status of the facility ruled out any form of effective management.

Management of grazing

In West Africa there are two types of territorial organization. The first is a communal property regime and is based on kinship or class. Membership of the group gives the individual herder the right to use the pastures of the group. Often regulations exist about how and when to use the pastures. Normally, the group will exclude other groups from using both pastures and wells.
In the second type a clear property regime is lacking. The group's claim to pastures is organized on a first-come, first-served basis.

Nevertheless, the actual wells do have clear proprietors, and consequently access to some pastures is limited (Shanmugaratnam 1992, pp. 55-56, quoting Swift 1988).
It is commonly held that the first type of territorial organization correspond to pastoral groups that are hierarchically structured, such as the Tamacheq or the Fulbe of the inner delta in Mali, and that the second type concerns non-hierarchical groups such as the Wodaabe Fulbe of Niger. However, this does not mean that any kind of responsibility for the environment is lacking. According to Malike *et al*. (1984) and Niamir (1990), the Wodaabe apply strict cycles in grazing, shifting their camp every other day and moving to other pastures each week. Even so, it goes without saying that modern interventions, such as deep wells, have disrupted these types of territorial organization.

Modern interventions with respect to the management of grazing concentrate on the rotation of pastures, conservation of degraded pastures and additional fodder production.

The PAs of the *Zones Pastorales* in Burkina Faso are probably the most advanced in this respect. The grazing blocks are precisely indicated. In Sondré-Est grazing is forbidden within a radius of 300m from the wells and ponds. The grazing blocks start 500 metres beyond these watersources. In the rainy season, animals can graze outside the zone. At the start of the dry season they graze the stubble fields of adjacent villages. Livestock only returns to Sondré-Est when water and fodder outside the *Zone Pastorale* is eshausted. The number of livestock allowed corresponds to the overall carrying capacity of the zone. Some grazing blocks are cultivated with foddercrops.

Similar rules apply for the Nouhao *Zone Pastorale*. In this zone PA members are also encouraged to cultivate fodder individually. Yet, although this is done by all herdsmen, the acreage under fodder is only symbolic. In the PA of Bani in Burkina Faso herdsmen have established a particular management system of grazing. All livestock herds are grazed every year, winding their way from east to west over the village pastures. This is in fact an area characterized by long-term fallow. Crop cultivation is confined to the edges of the *bas-fond*.

In Mali, ODEM has created three pastoral blocks in the inner delta, near Karbai, Soufroulaye-Diaby and Ibetemi, respectively consisting of 1000, 1300 and 300 ha. Officially these blocks are opened for grazing at the end of the dry season when herdsmen run out of natural pastures. However, the blocks are not maintained, nor are they effectively controlled, by the surrounding villages. They are now degraded and invaded by wild rice.
In Mali, the example of grazing area P17 in the Séno Mango is often referred to as a classic case of successful environmental management. Herdsmen from the PAs of Boni, Serma and Fete Sambo graze their livestock in this scheme and keep up the firebreaks, respect grazing regulations and pay levies. Nevertheless, as indicated above, Van Dijk & De Bruijn (1995) have shown that successful environmental management is not synonymous with equal access to resources.

In Niger, the examples of pasture management encountered were embedded more in traditional regulations than in modern institutions. Pastoral groups like Toubou, Tamacheq and Arabs still hold their grazing areas as communal property and recognize the authority of grazing chiefs, who judge the state of the vegetation and decide which pastures are to be used and which to be preserved.
Regeneration of degraded pastures is an important topic in all livestock projects, though this whole subject has been put put in perspective the recent debate on vegetation development in non-equilibrium ecosystems (2). In spite of these new insights, conservation and regeneration of vegetation are clear motives underlying the enclosure of pastures in the *Zones Pastorales* of Burkina Faso and in the Séno Mango of Mali, as described above.
Of course, indigenous knowledge systems make use of the capability of pastures to regenerate naturally. For instance, herdsmen of the PA of Bani did not graze a strongly degraded part of their pastures for over twelve years. A few areas, where vegetation was regenerating, were carefully controlled. The grasses were not grazed but mowed every year and then used as fodder.
In the PAs of Aldjanaré and Lartchanga in Niger, old camp sites used to be protected since they constitute important regeneration poles. However, they have recently been browsed by sheep and goats, thus jeopardizing the regeneration capacity, as we were able to observe.

With respect to the management of grazing areas, we may conclude that historically, especially in the Sahel, opportunistic range management is the standard, although in hierarchical societies it was more systematically regulated. These traditional regulations are

still the basis of the more successful range management in Niger, although examples from Mali have shown that this is not a prerequisite. Most important, new thinking as exemplified by the so-called ‘new rangeland ecology’ helps to explain why high expectations of the possibilities of pastoralists to conserve their grazing areas were unrealistic.

5. DISCUSSION

We have observed numerous examples of PAs contributing in cash or labour to the costs of the investments for different facilities in their area. Although we have deliberately selected for our survey successful PAs, this criterion has to be somewhat relaxed, as most of the PAs visited only performed slightly better than neighbouring PAs.

In fact, we have to admit that the sum of their own contribution is meagre compared with the total amount of the investment. This could be an indication of the poverty of the communities involved. However, frequently the contribution of a PA is so small, that there is a need for additional explanations to account for this lack of commitment.
In general, new facilities have been proposed for the local community without prior assessment of their needs and priorities. This problem, combined with many examples of investments which did not pay off, such as expensive wells falling dry (about which the local population maintains a collective memory whereas government and donor agencies suffer from chronic amnesia) or which were provided free of charge, suggests that a reluctant attitude can be expected from the local community.

Moreover, none of the PAs visited showed a satisfactory level of cost-recovery. This may be an indication of unwillingness too. Nonetheless, we think it is equally convincing to point at the investment level, which is generally too high for producers who come from a subsistence sector and who occasionally operate in markets in which they often find themselves insufficiently competitive. The problems that government and donor agencies nowadays encounter with privatizing the veterinary services in West Africa are a symptom of the same circumstance.
Therefore, it may be concluded from a financial point of view, that PAs in their present form are not viable as independent institutions, because "ownership" cannot be achieved without permanent subsidies from outside. This first phenomenon accounts for the existence of the numerous ramshackle facilities we have encountered during our survey.

The same goes for the politico-juridical status of the PAs. Ownership rights of facilities, communal ownership of pastures, entitlement to water, etc. are not, or insufficiently, defined. And even if this is the case, power relations may make a mockery of these rights. (During our survey the Arabs of Tasara in Niger were reported to have successfully defended their pastures against the Tamacheq: a perfect case of land management by kalashnikov).
As long as a PA operates within the framework of a project, a policy of creating *faits accomplis* in this politico-juridical field, enforced by vigorous project management, may make it successful. However, the whole framework will collapse as soon as the projects ends. This second phenomenon explains why many modern regulations about the use of natural resources have fallen into abeyance.

Having outlined two important contextual factors that determine the success of PAs, we may now turn to "internal" conditions which influence their performance.

Affirming that a coherent social structure is a prerequisite for efficient functioning, is obvious. Except for a few PAs in Mali, all other PA of our survey were assigned to, from an ethnic point of view, homogeneous groups, sometimes even kinship groups. Embedding a PA in traditional social structures is likely to increase its chances for success, because its operations will be supported by existing bonds and interests and connected to existing natural resource management practices. On the other hand, it carries with it the danger of intensifying existing polarization.

With the possible exception of the successful PA of Bani, consisting of Rimaïbé, former slaves of the Fulbe, we did not observe cases of the emancipation of deprived groups through PAs. On the contrary, because the participatory approach in pastoral projects is still in its infancy, lower social strata and women tend to become marginalized, while elites gain, as the case of Boni illustrates. Nevertheless, we may hypothesize that in the medium term more PAs may reveal such an emancipatory trend.
They may also serve as vehicles for agro-pastoralists in their quest for more secure rights to natural resource exploitation in areas where they have only quite recently settled.

In the final analysis we have to judge the performance of PAs by evaluating their achievements in the management of the sustainable exploitation of natural resources. At the start of our project we certainly did not expect PAs to bring about the greening of the Sahel. However, gradually it even became difficult to determine wheter they had any achievements at all. If we disregard the project interventions, by which the carrying capacity was improved, rotational grazing introduced and water provided on the one hand, and the traditional management practices for regulating, as of old, the use of water and pastures on the other hand, nothing else is left to talk about. In fact the PA is no more and no less than the turntable between both these forms of management.
Thus, really successful PAs reconcile both worlds. However, the problem is that project interventions are usually too expensive and too complicated to fit in easily with existing local management of natural resources. Therefore, to date only minor facilities such as small-scale ponds, dams and wells have proved to be successful.

At this point, we have to again question the high expectations about the PAs contribution to sustainable natural resource management. These expectations seem to be inspired by neo-populist paradigm assumptions currently *en vogue* in pastoral studies, rather than by realistic thinking.
Following Blaikie (1995; 1996a and 1996b), who has recently pointed at a paradigm shift in development studies, De Haan (1997) has made an attempt to position both the successive livestock development policies in Africa and the advancement of scientific thinking about African pastoralism. According to Blaikie, in the 1980s a neo-populist school of scientific thinking emerged. In this approach local knowledge stands central. Pastoralists themselves would use their own knowledge and skills to work out their own solutions to problems that they would set themselves, concerning for instance cattle diseases, availability of water or range management. Participatory technology development is the key-phrase for researchers and empowerment a condition for successful implementation.

It is especially the latter paradigm that is responsible for the exaggerated claims made for the sacred concepts of localness and grass-root participation that have contributed to the gloomy prospects of local environmental management and the presumed success of PAs.

But now the dilemma facing a final judgement of PAs becomes clear too. According to Vedeld (1994), governments and donor agencies still expect these associations to achieve the old objectives of the ranching and range-livestock schemes such as destocking, rotational grazing and maintaining an equilibrium between grazing pressure and the carrying capacity of the area.
If we take a bird's-eye view of livestock development policies in Africa we have to admit that, as compared with the past, a lot has been achieved already in the last decade in making intervention work at the local level. More insistence on a participatory approach in determining the content and implementation of interventions will contribute to the better performance of PAs.
However, it should be noted that the participatory approach is not a panacea. After all, again looking at the overall perspective, the PAs may ultimately also come to be considered merely as the most recent move of the state to incorporate a sector hitherto difficult to capture. Continuous political and economic marginalization has gradually weakened the power base of pastoralists in the region. The state has seized the influx of project funding by external donors to renew its efforts to effectively integrate the pastoral communities in its polity. Most pastoral projects are characterized by a top-down approach with regard to the organizational restructuring of the pastoral economy. Most PAs can be viewed as a another step towards effective incorporation of pastoralists in the state. The mandate of PAs, their modalities of operation as well as their practical activities are determined by the various government institutions concerned. This could to some extent explain why in general PAs have a high rate of failure.
However, in the case of success there is a risk that when a project terminates, the PA will then stop functioning. The unreliability of project life cycles has a decisive impact on the success of PAs. Support of governments through the implementation of tangible projects in the pastoral areas is simply perceived as a reward for the allegiance of the pastoralists concerned, and not as a support for self sustained development.

6. NOTES kleine letters

(1)
Explanation of signs used in Table 1
A: a plus sign indicates that a PA is actively engaged in efforts to conserve or manage water resources. The R stands for the presence of water reservoirs such as small ponds or artificial lakes. The F stands for deep wells or boreholes.
B: a plus sign signals the active involvement of the PA to regulate access or to apply rotation with regard to pastures. An R stands for active protection of natural regeneration or the planting of trees.
C: a plus sign stands for the explicit promotion of animal production. The I points to the collective purchase of animal food for the dry season or the stockpiling of hay.
D: a plus sign indicates activities to protect the soil against water- or wind erosion, such as constructing terraces or applying other soil-conserving techniques.
E: a plus sign points at a positive evaluation by the members of the PAs objectives.

(2)

Behnke, Scoones & Kerven (1993), Scoones (1994) and Behnke & Kerven (1994), have recently demonstrated in various articles how scientific opinion about traditional range management in Africa has dramatically changed in the last decade. Originally, rangeland experts used to judge success or failure of traditional range management practices by means of botanic indices related to the Clementsian model of climax vegetation community succession. This model explains how range condition can be manipulated backwards and forwards from good to poor conditions along a graded continuum in response to variations in grazing pressure (Prior 1994, p.17).

However, measuring the condition of the vegetation by this type of assessment is questioned with regard to semi-arid Africa, because the model presupposes that, depending on soil and climate, every area has its own climax vegetation, It assumes that the state of vegetation will eventually return to its climax situation once exploitation stops. According to this model, it was supposed to be the responsibility of the herder to maintain an equilibrium between, on the one hand, the grazing pressure of his herd, and, on the other hand, the natural regeneration pressure of the ecosystem in the direction of the climax vegetation.

However, "new range ecology" research has indicated that areas with notable climatological variability, such as the drylands of Africa, do not have a climax vegetation, because environmental variability is so extreme that average situations are an exception to the rule. This means that herdsmen are not able to maintain an equilibrium between grazing pressure and the carrying capacity of natural resources, because the latter is constantly changing.

In climatically unstable environments the dominant factor influencing changes in vegetation is rainfall, which lies outside control of the herdsmen. Less grazing pressure in one year does not guarantee success in the next year, because a dry spell may then rule out any exploitation. As a consequence the only option open to range managers, who are not able to control the environment, is to adapt to it. This is called "opportunistic range management" in new thinking on range ecology, which is characterized by the herder's objective to maintain large and productive herds if rainfall and vegetation permit and to destock as quickly and as profitably when circumstances dictate (Beeckman & Clarysse 1991; Behnke, Scoones & Kerven 1993; Scoones 1994; Behnke & Kerven 1994; Prior 1994).

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Table 1 Pastoral Associations activities performance

Name	Project	Water	A Pasture	B Product.	Soil	C PA	D	E
Boni	ODEM		+ R/F	+ R		+ I	+	+
Serma	ODEM		+ R/F	+ R		-	+	+
Toulev	ODEM		- F	-		-	-	-
Yirma	ODEM		+ F	- R		-	-	+
Koba	ODEM		- F	-		-	-	+
Niaqui	ODEM		+ F	-		-	-	+
Tini	ODEM		- F	-		-	-	-
M'Bana	ODEM		- F	-		+ I	-	+
Nere-Koro	ODEM		+ R	+		+	-	+
Nia-ouro	ODEM		-	+		+ I	-	+
Debere	PDES		+ R/F	- R		+ I	+	+
Mentao	PDES		-	- R		+ I	-	-
Bani	PDES		+ R	+ R		+ I	+	+
Noral Kindal	PDES		-	-		+ I	+	+
Silgadji	PDES		-	- R		+ I	-	+
Kenou	PDES		-	+ R		-	+	+
Diguel	PDES		- F	+		+ I	+	+
Wapta	PDES		-	-		+ I	-	-
Aribinda	PDES		+ R	- R		+ I	+	+
Alla Walbu	PDES		-	-		+ I	-	+
Sergou-souma	PDES		-	-		+ I	-	-
Agu-So	PDES		-	-		-	-	-
Soutra Mengao	PDES		-	-		+ I	-	+
Bougou	PES		-	-		+	-	-

nam						
Gourcy	PES	-	- R	+	-	-
Niessega	PES	-	-	+ I	-	+
Sougri Ouahig	PES	-	- R	+ I	-	+
Koom	PES	+ R	-	+ I	+	+
Sidway	PES	-	-	+ I	-	+
Gourcy	PES	-	-	-	-	-
Lart-changa	PENCE	- F	-	-	-	+
Aljana	PENCE	+ F	+ R	-	-	+
CP* Tasker	PENCE	+ F	-	-	-	+
CP** Tejira	PENCE	- F	-	-	-	+
TT1	FIDA/ PSN	-	-	-	-	-
TT2	PSN	-	-	-	+	-
TT3	PSN	-	-	+	+	+
TT4	PSN	-	-	-	-	+
TT5	PSN	-	+ R	-	+	+
TT6	PSN	+ F	-	-	+	+
TT7	PSN	-	-	-	-	+
TT8	PSN	-	-	-	-	-
ABK1	PSN	+ R	+	-	-	-
ABK2	PSN	-	-	-	-	+
ABK3	PSN	+ R	-	-	+	+
ABK4	PSN	- F	-	-	-	-
ABK5	PSN	-	-	-	-	-
ABK6	PSN	- F	-	-	-	-
ABK7	PSN	- F	-	-	+	-
ABK8	PSN	- F	-	-	-	+

ABK9	PSN	+ R	+	-	-	+
ABK10	PSN	-	-	-	-	-
ABK11	PSN	+ R	+	-	+	+
ABK12	PSN	-	-	-	-	-
TASS1	PSN	-	-	-	-	+
Tass2	PSN	- F	-	-	-	-
Tass3	PSN	-	-	-	-	-
Soud-anese Zone						
Nouhao	ZP	+ F	+	+ I	+	+
Sondre	ZP	+ R/F	+	-	+	+
Gadhin	ZP	+ F	+	+	-	+
Markan	ZP	+ F	+	-	-	+
Gaongo	ZP	+ F	+	-	-	-
Zegoua	CMDT-P	+ R	-	-	-	+
Kebila	CMDT-P	-	-	-	-	-
Koro-b	CMDT-P	-	-	-	-	-
Konse-guela	CMDT/ PAAP	+ R	-	-	-	+

* and ** are the two Pastoral Centres we have visited
in de Sahel zone in Niger

The First column contains the names of villages with the exception of the PSN project zone in Niger.The names of the PAs in this project zone refer to the Department they are located in: TT = Tchin Tabaradene, ABK = Abalak and Tass = Tassara.

Second column:

Project Abreviations:

ODEM > Northern Mali (Vième Région mostly)
PDES > Soum province Burkina Faso
PES > Yatenga province Burkina Faso

PENCE > East of Niger (Département de Zinder mostly)
PSN > Central north of Niger (Département de Tahoua mostly)
ZP > In the Sudan zones of Burkina Faso
CMDT/PAAP > Southern Mali (Région de Sikasso mostly)

Table 2
PA performance per Project and Ecological Zone for various activities

Project / cases=100%	Water	Pasture	Product.	Soil prot	APparticip
ODEM* /10	5 / 50%	4 / 40%	4 / 40%	2 / 20%	8 / 80%
PDES* /13	3 / 23%	1 / 8%	11/ 85%	6 / 46%	9 / 69%
PES* /7	1 / 14%	-	6 / 86%	1 / 14%	4 / 57%
PENCE* /4	2 / 50%	1 / 25%	-	-	4 / 100%
PSN* /23	5 / 22%	4 / 17%	1 / 4%	7 / 30%	11/ 48%
ZP** /5	5 / 100%	5 / 100%	2 / 40%	2 / 40%	4 / 80%
PAAP** /4	2 / 50%	-	-	-	2 / 50%
SAHEL* /57	16/ 28%	12/ 21%	22/ 39%	16/ 28%	36/ 63%
SUDAN** /9	7 / 78%	5 / 56%	2 / 22%	2 / 22%	6 / 67%
Total /66	23/ 35%	17/ 26%	24/ 36%	18/ 27%	42/ 64%